

NIGERIAN MANUFACTURING SECTOR AND ECONOMIC PERFORMANCE

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ABSTRACT

The broad aim of this study is to examine the impact of manufacturing sector on the Nigerian economy. Quarterly data were used in this study and these data were obtained from the CBN statistical bulletin for a period of 2010 to 2016 which summed up 28 observations. The study adopted quasi-experimental research design. More importantly, Nigerian economy which is the dependent variable in this study was measured by Gross Domestic Product while manufacturing sector which is the independent variable was proxied by Oil Refining subsector GDP, Cement subsector GDP, Food, Beverage and Tobacco subsector GDP, Textile, Apparel and Footwear subsector GDP, Wood and Wood Products subsector GDP, Pulp, Paper and Paper Products subsector GDP, Chemical and Pharmaceutical Products subsector GDP, Non-Metallic Products subsector GDP, Plastic and Rubber Products subsector GDP, Electrical and Electronics subsector GDP, Basic metal, Iron and Steel subsector GDP, Motor Vehicles & Assembly subsector GDP. Econometric model was developed and specified to establish the existing relationship between the dependent variable and the independent variable. The model was estimated by ordinary least squares (OLS) technique while the data analysis was facilitated by econometric views (E-views) statistical software 8.0. The findings obtained in the study showed that: Oil Refining subsector GDP, Cement subsector GDP, Food, Beverage and Tobacco subsector GDP, Textile, Apparel and Footwear subsector GDP, Chemical and Pharmaceutical Products subsector GDP, Plastic and Rubber Products subsector GDP, and Basic metal, Iron and Steel subsector GDP have individual positive and significant impact on Gross Domestic Product in Nigeria while Pulp, Paper and Paper Products subsector GDP, Wood and Wood Products subsector GDP Non-Metallic Products subsector GDP, Electrical and Electronics subsector GDP, Motor Vehicles & Assembly subsector GDP. The study recommends that that manufacturing sector should be encouraged by the government through policy packages such as tax holiday and other helpful concessions in order to enhance manufacturing output in the country.

Keywords: Manufacturing Sector, GDP, Economic performance, Development.

INTRODUCTION

Manufacturing sector plays a crucial role in the development of modern economy throughout the world. Manufacturing sector as a sub-sector of the industrial sector, deals with the productions of goods through combined utilization of raw materials and other production factors such as labour force, land and capital or by means of production process. In advanced economies, the manufacturing sector is a leading sector in many respects. It is an avenue for increasing productivity related to import replacement and export expansion, creating foreign exchange earning capacity; and raising employment and per capita income which causes unique consumption patterns (Anyanwu, 2010).

Furthermore, manufacturing sector creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors. In terms of contribution to the Gross Domestic Product (GDP), the manufacturing sector is dominant and it has been overtaken by the services sector in a number of Organizations for Economic Co-operation and development (OECD) countries (Anyanwu, 2010).

In recognition of these potential roles of the sector, successive governments in Nigeria have continued to articulate policy measures and programme to achieve industrial growth incentive and adequate finance. To underscore the pivotal and critical role the manufacturing industry plays in capital formation, domestic savings and its effect in the realization of sustainable economic growth and general prosperity in Nigeria, the federal government at different times introduced a number of schemes such as World Bank SME II Loan Scheme (1987), Small Scale Industries Credit Scheme (1971), established Industrial Development Centres, National Economic Reconstruction Fund (NERFUND), Nigerian Bank for Commerce and Industries, Nigerian Industrial Development Bank all aimed at improving and sustaining the performance of the sector (Orji, 2012).

In 2010, the federal government through the Central Bank of Nigeria made available the sum of N200 billion as Manufacturers' Intervention Fund. The objectives of the fund include fast-tracking the development of the manufacturing sector of the Nigerian economy by improving access to credit to manufacturers; improving the financial position of the Deposit Money Banks; increasing output; generating employment; diversifying the revenue base, as well as increasing foreign exchange earnings. It is also meant to provide inputs for the industrial sector on a sustainable basis. Similarly, the involvement of the private sector such as the Dangote group, Honey well among others in the manufacturing sector has boosted its development (CBN, 2010). The economy of Nigeria prior to the oil boom (1960-1973) was primarily agricultural. Therefore, exports of primary commodities, namely cocoa, groundnut, palm oil, coffee etc. were the engine of growth. In 1960, agriculture contributed 62.9% to the Gross Domestic Product (GDP). By 1974, its contribution to GDP dramatically decreased to 23.9%. This sudden decrease came as a result of the improvements in the oil sector in the late part of 1973 and the early part of 1974. However, with the increased demand for imported consumer goods, a non-agricultural sector consisting of modern services and a small manufacturing sector emerged. The manufacturing sector at this period was essentially agro-allied or agro-processing and, hence, had a strong link with the agricultural sector. The Nigeria's manufacturing has been established both through the processing of domestic materials and through using imported inputs. But there is a far greater variety of manufacturing industries designed for the local Nigerian markets. However, most of the limited range of manufactured export goods were still quite close to the raw material stage, for instance, tin, groundnut, palm oil, rubber, and plywood. At this early period of the 1960s, manufactured exports constituted about 10% of total Nigerian exports. By 1962-1963 the manufacturing sector contributed 5.6% to the GDP. Since then, the manufacturing sector has been growing but at a slower pace. However, in 1973-1974, its contribution to the GDP increased to 8.9%. As time went on, production of manufactured goods for domestic consumption, regardless of whether the inputs are domestically produced or imported, accounted for the largest share of manufacturing output. Indeed, one can observe that the structure of the manufacturing sector had changed from essentially agro-processing to one of import-substituting, for instance, soft drinks, tobacco products, beer, and textiles.

The period 1974-1986 experienced a dramatic decline in the manufacturing exports. Manufacturing exports fell from 2.8% in 1973 to 1.1% in 1975. At this period, more emphasis was given to the oil sector as the main engine of growth. Though the country's oil sector earned virtually all the foreign exchange; its share declined from its peak in 1975 to 14.4% of the GDP in 1979. The share of the manufacturing sector in the GDP was still negligible, being a tiny 6.1% in 1979. The period 1974-1981 represents the oil boom era. Nigeria had been receiving increasing prices for its oil between 1971 and 1973. Due to the increased prices, oil exports had risen from 83.1% in 1973 to 92.6% in 1974. Hence, Nigerian government oil revenues almost quintupled in nine months, the rise coming from higher prices, greater production, and an increase in the government's share of the oil revenues from higher taxes and royalties and ownership. By the mid-1970s, the engine of Nigeria's economic growth was its oil exports. Such over specialization meant, of course, that Nigeria became a very "dependent" country. By 1981, the oil sector was accounting for over 95% of total exports. Between 1982 and 1986, the fall in oil prices and export volume was felt in all sectors of the economy. For instance, the percent of oil export which stood at 96.1% in 1980 fell to 93.8% in 1986. The external payment situation was worse in 1983 leading to the largest accumulation of payments arrears ever recorded and by 2000, both industrial and agricultural output fell drastically (Central Bank of Nigeria, 2003). Therefore, agricultural and manufacturing exports did not help the situation at this period. The contributions of the agricultural and manufacturing exports to the total exports were still negligible. Hence, during this period, Nigeria was still dependent on its oil exports for its foreign exchange. The period 1992-2014 experienced a dramatic decline in manufacturing exports and remained relatively low throughout the period. This period was marked by dwindling government revenue, structural adjustment, and privatization. At this period, emphasis was shifted in favour of private sector-led economic growth. The history of industrial development and manufacturing production in Nigeria is a classic illustration of how a nation could neglect a vital sector through policy inconsistencies and distractions attributable to the discovery of oil. For instance, the near total neglect of agriculture in Nigeria has denied many manufacturers and industries their primary source of raw materials. In essence, the absence of locally sourced inputs has resulted in low industrialization.

In addition, manufacturing firms in Nigeria have continued to experience challenges with accessing credit from the banking sector, which in turn affects the importation of raw materials. Other challenges include epileptic supply of electricity and the increased pump price of diesel used mainly in the private provision of electricity. This poor manufacturing performance has been attributed to high production cost as a result of high cost of foreign exchange, high interest rate, poor demand, incessant poor description, insufficient raw materials supply, inadequate working capital and frequent machine break downs. All the sector are not affected in the same magnitude hence this study intend to evaluate the impact of the ten subsector in the manufacturing sector in Nigeria

The main objective of this study is to examine the impact of manufacturing sector on the Nigerian economy. Specifically, the study seeks to investigate the impact the existing subsector on Gross Domestic Product in Nigeria. This research work will be organized in five sections, each section presents related information on the topic which would help for easy understanding. Section one, introduces the subject of discourse. Section two, is the review of related literature. Section 3 is the methodology adopted, section four provides the data presentation, data analysis, and interpretation of results and section five deals with the

concluding remarks and recommendations, finally the bibliography and other appendixes ends the study.

REVIEW OF LITERATURE

Theory of Production

The economic theory of production provides the analytical framework for most empirical research on productivity. At the core of the theory is the production function, which postulates a well-defined relationship between a vector of maximum producible outputs and a vector of factors of production. According to Nelson (1981) historical analyses of total factor productivity change conceptualize it as the change in output level controlling for input levels, i.e., the vertical shift of the production function. Consequently, factor productivity has been given such labels as the “residual”. A number of studies have attempted to characterize productivity change as embracing technological advance, changing composition of the work force, investments in human capital, reallocation of resources from lower to higher productivity activities, and economies of scale. To Nadiri (1970), “productivity change is both the cause and the consequence of the evolution of dynamic forces operating in an economy - technical progress, accumulation of human and physical capital, enterprise and institutional arrangements”. Despite the confusion underlying the broad issue of productivity, the specific theme of trade policy and productivity growth has much more robust and clear-cut theoretical formulations underpinning it. One such theoretical construct is the x-efficiency argument. According to Nishimizu and Robinson (1983) Development economists for a variety of reasons routinely argue that trade protection reduces industrial sector efficiency. In markets characterized by entry barriers, the absence of foreign competition allows domestic producers to enjoy monopoly power and excess profits. Consequently, these firms may fail to produce at minimum efficient scale (achieve “scale efficiency”) and/or to get the maximum possible output from their input bundles (achieve “technical efficiency” or “x-efficiency”). This scenario is reversed when there is more liberalization and greater opening up to international competition. There is an implicit “challenge response” mechanism induced by competition, forcing domestic industries to adopt new technologies to reduce x-inefficiency and generally to reduce costs wherever possible. According to this argument, export expansion is good and so too is import liberalization. While the policy of increasing imports may restrict the market for domestic goods, it also increases competition and hence induces greater efficiency.

The Exogenous Growth Model

The exogenous growth model, also known as the neo – classical growth model or Solow-Swan growth model was first devised by Nobel Prize winning Economist, Robert Solow in 1957. The centrepiece of the standard neoclassical growth model developed by Solow is an aggregate production function of the form: $Y_t = F(K_t, L_t, A_t)$

Where: Y is output, K is capital, L is labour and A is an index of technology or efficiency. Solow posits that F has the usual neoclassical properties; in particular, it is characterized by constant returns to scale, decreasing returns to each input, and a positive and constant elasticity of substitution. The fundamental dynamic equation of the model relates the evolution of the capital stock to a constant rate of saving and a constant rate of depreciation. Labour and the level of technology grow at exogenous exponential rates.

This model assumes that countries use their resources efficiently and that there are diminishing returns to capital as labour increases. From these two premises, the neo-classical model makes three important predictions; first, increasing capital relative to labour creates economic growth, since people can be more productive given more capital. Second, poor

countries with less capital per person will grow faster because each investment in capital will produce a higher return than rich countries with ample capital. Third, because of diminishing returns to capital, economies will eventually reach a point at which no new increase in capital will create economic growth. This point is called a “steady state”.

If there were no technological progress, growth in this model would eventually come to a halt. However, the formulation of the model is chosen so as to allow increases in efficiency to offset the diminishing returns to capital. The economy therefore converges to a steady state in which output and capital per worker both grow at the exogenous rate of technological progress. Accordingly, in the long run, economic growth is unaffected by changes in the rate of saving or population growth. Changes in these parameters alter only the level of the long-run growth path, but not its slope.

Endogenous Growth Theory

Endogenous growth theory or new growth theory was developed in the 1980s, as a response to criticism of the neo-classical growth model. According to Gokal and Hanif (2004) the endogenous growth theory holds that policy measures can have an impact on the long-run growth rate of an economy. Endogenous growth economists believe that improvements in productivity can be linked to a faster pace of innovation (which can be brought about by industrial sector) and extra investment in human capital. Endogenous growth theory describes economic growth which is generated by factors within the production process, for example; economies of scale, increasing returns or induced technological change; as opposed to outside (exogenous) factors such as the increases in population. In endogenous growth theory, Gillman, Harris and Matyas (2002) noted that the growth rate has depended on one variable: the rate of return on capital.

The endogenous growth literature has produced two distinct approaches on how to incorporate human capital into models of economic growth. The first, which is due to Lucas, regards the accumulation of human capital as the engine of growth. The second approach emphasizes the role of innovation and adoption of new technologies in production. In the model formulated by Lucas, human capital enters into the production function similarly to the way in which technology does in the Solow model, that is, in labour-augmenting form.

Lucas proposes the following production technology:

$$Y_t = AK_t^\beta (u_t h_t L_t)^{1-\beta} h_{a,t}^\gamma$$

where Y , A , K and L are, once again, output, technology, capital and labour, while u is the fraction of an individual's time allocated to work, h is the skill level or human capital of the representative agent, and h_a is the average human capital in the economy. The level of technology, A , is assumed to be constant (so that it could in principle be dropped from the expression or subsumed within the capital term). Population growth is taken as exogenous. Setting aside the last term on the right-hand side for the moment, the most important assumption of the model concerns the law of motion according to which the human capital variable evolves over time.

And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth. The properties of the steady state in the Lucas model depend on whether there are external effects of human capital, which is the case if $\gamma \neq 0$. In that case, the term h in the production function therefore affects output. And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth. Edame and Okoro (2010) opined that endogenous growth theory assumes constant marginal product of

capital at the aggregate level, or at least that the limit of the marginal product of capital does not tend towards zero. However, in many endogenous growth theories, this assumption of perfect competition is relaxed, and some degree of monopoly is thought to exist.

Empirical Review

Nwakanma, Nnamdi, and Omojefe (2014) evaluated the long-run relationship and the directions of prevailing causality between bank credits to the private sector (which includes the manufacturing sub sector) and the nation's economic growth. The study concluded based on the Autoregressive Distributed Lag Bound (ARDL) and Granger Causality that bank credits have significant long-run relationship with growth but without significant causality in any direction.

Benedict (2015) examined the effects of manufacturing Price Distortions on output in the manufacturing sector of Nigeria. Specifically, the study tested the hypothesis that manufacturing price distortions are inversely related to output growth in the same sector. The study adopted a model based on a modified neoclassical production function where manufacturing exports are taken as inputs. Manufacturing price distortions causes a wedge between the domestic and foreign price of manufacturing exports and thereby reduces the volume of trade and, in consequence, the real GNP as well. And to derive consistent, unbiased, and efficient estimators of the structural equations, the model so developed was estimated by Ordinary Least Square (OLS) method. The analysis confirms the view that manufacturing price distortions have a significant and negative influence on manufacturing output.

Olorunfemi, Tomola, Felix and Ogunleye (2013) examined manufacturing performance for sustainable economic development in Nigeria, while the specific objectives are as follows: (i) to look at the growth rate and contribution of manufacturing to GDP. (ii) to examine trend in both manufacturing and employment. (iii) to determine the structure of capacity utilization. iv) to determine factors influencing manufacturing performance. Panel data analysis was used on secondary data from 1980 -2008 that was extracted from CBN Statistical Bulletin. The results indicate positive relationship between manufacturing and each of capacity utilization and import as 1 percent change in capacity utilization and import lead to 43081 and 3.8 percent change in manufacturing respectively. However, there is a negative relationship between manufacturing and each of investment, exchange rate, and export. A 1 percent change in investment, exchange rate and export lead to 0.04 and 0.3 percent reduction in manufacturing respectively. The t-values for investment, capacity utilization and import were used to test the hypothesis that each coefficient is different from 0. This is rejected; since the t-value are lower than 1.96 (at 95% confidence level).

Matthew, (2006) examines the impact of oil and gas production on the Nigerian economy. The study showed that economy of Nigeria is very important to the country, but the people of Nigeria still suffer from a corrupt government. Despite the revenues being brought in from oil exports, the Nigerian government still holds a large unemployment rate and a high poverty rate. This study further showed the amount of oil being produced per day, as well as, the process by which the oil is brought to the market. This paper also shows the labor to GDP ratio, the major exports, and the major imports of Nigeria. Finally, an understanding of the ethnic struggle within Nigeria is looked at, as well as, the illegal oil racketeering that is costing the Nigerian governments billions of dollars. Until the people of Nigeria can take control of its government and rid themselves of the crushing militias that controls the politics in Nigeria, the people are doomed to suffer.

Impacts on real growth, inflation, and short run costs, in their report on the United States Industrial Sector, they showed how capacity utilization can impact on economic growth using the non- parametric tool of correlation analysis. Their empirical findings were that a correlation of 0.9 existed between annual changes in the real output of goods and the index of capacity utilization for manufacturing. More importantly, they posted that movements in capacity utilization can be taken as stemming primarily from shocks to aggregate demand, which pushes the economy along an upward-sloping aggregate supply curve. They found that capacity utilization in the manufacturing sector was indicative of the cyclical state of overall aggregate demand and for this reason the predictive power factory operating rates for inflation had long endured. Ogar, Nkamare and Charles (2014) determined how commercial bank credit can influence manufacturing sector in Nigeria. The objective of the study was to investigate the impact of commercial bank loans on manufacturing sector and to establish the relationship between interest rate and manufacturing sector performance. Secondary source of data was employed using Central bank statistical bulletin. Ordinary least square of multiple regression models was used to establish the relationship between dependent variable and independent variables. The finding revealed that commercial bank credit had a significant relationship with manufacturing sector.

Akujuobi and Chimaijemr (2012) examined the effect of commercial bank credit to the sub sectors of the production on growth between 1960 and 2008. The study confirmed long run relationship and while credits to agriculture, forestry and fishery, manufacturing, mining and quarrying, and real estate and construction are negative and insignificant, credit through the mining and quarrying sub-sector have significant positive contribution on growth. From the inferential results, the study found that a significantly weak and strong correlation exists between commercial bank and merchant bank lending respectively and agricultural sector's contribution to GDP.

METHODOLOGY

This study will dwell mainly on library research as it makes use of secondary data only. The data to be used to run the analysis for this study will be extracted mainly from Central Bank of Nigeria (CBN) statistical bulletin. There will be no special procedure for collection of the data as these figures will merely be extracted from the above mentioned source.

Model Specification

This part of the research portrays the specified model being used in this work. A model is a simplified view of reality deigned to enable a researcher describe the essence and inter relationship within the system or phenomenon it depicts. In this study, econometric model is the model adopted. The econometric model adopted in this study will be used to establish the relationship that exists between the dependent variables and the independent variables. In this model, the dependent variable is the Nigerian economy and it is measured Gross Domestic Product. Manufacturing sector is the independent variable and is proxied by Oil Refining subsector GDP, Cement subsector GDP, Food, Beverage and Tobacco subsector GDP, Textile, Apparel and Footwear subsector GDP, Wood and Wood Products subsector GDP, Pulp, Paper and Paper Products subsector GDP, Chemical and Pharmaceutical Products subsector GDP, Non-Metallic Products subsector GDP, Plastic and Rubber Productssubsector GDP, Electrical and Electronics subsector GDP, Basic metal, Iron and Steel subsector GDP, Motor Vehicles & Assemblysubsector GDP. The model is specified as follows:

$$\text{GDP} = f(\text{OILRSG, CETSG, FBTS, TAFSG, WWPSG, PPPSG, CPPSG, NMPSG, PRPSG, EETSG, BMISSG, MVASG}) \dots \dots \dots (3.1)$$

In statistics, the above equation (3.1) is not sufficient in specification due to the absence of the constant parameter and error term. Thus, the equation (3.1) above is therefore explicitly stated as follows:

$$\mathbf{GDP} = \alpha_0 + \alpha_1\mathbf{OILRSG} + \alpha_2\mathbf{CETSG} + \alpha_3\mathbf{FBTSG} + \alpha_4\mathbf{TAFSG} + \alpha_5\mathbf{WWPSG} + \alpha_6\mathbf{PPPSG} + \alpha_7\mathbf{CPPSG} + \alpha_8\mathbf{NMPSG} + \alpha_9\mathbf{PRPSG} + \alpha_{10}\mathbf{EETSG} + \alpha_{11}\mathbf{BMISSG} + \alpha_{12}\mathbf{MVASG} + et \dots\dots\dots(3.2)$$

Where:

- GDP** = Gross Domestic Product GDP
- OILRSG** = Oil Refining subsector GDP)
- CETSG** = Cement subsector GDP
- FBTSG** = Food, Beverage and Tobacco subsector GDP
- TAFSG** = Textile, Apparel and Footwear subsector GDP
- WWPSG** = Wood and Wood Products subsector GDP
- PPPSG** = Pulp, Paper and Paper Products subsector GDP
- CPPSG** = Chemical and Pharmaceutical Products subsector GDP
- NMPSG** = Non-Metallic Products subsector GDP
- PRPSG** = Plastic and Rubber products subsector GDP
- EETSG** = Electrical and Electronics subsector GDP
- BMISSG** = Basic metal, Iron and Steel subsector GDP
- MVASG** = Motor vehicles & assembly subsector GDP
- α_0 = Regression intercept/constant variable
- $\alpha_1 - \alpha_{12}$ = Parameter estimates
- et* = Disturbance term which is a random (stochastic) variable that has well defined probabilistic properties.

A Priori Expectation

The *a priori* expectation will evaluate the parameter in terms of its meeting the standard economic theory expectation. Economic theory explains the nature of the variables being used and their relationship with one another. The evaluation therefore is based on whether the parameter conforms to economic postulations or not.

IN THE SPECIFIED MODEL: The expected relationship is that all the subsectors GDP, will have individual positive impact on Gross Domestic Product. Mathematically, this is expressed as: $\alpha_1>0, \alpha_2>0, \alpha_3>0, \alpha_4>0, \alpha_5>0, \alpha_6>0, \alpha_7>0, \alpha_8>0, \alpha_9>0, \alpha_{10}>0, \alpha_{11}>0, \alpha_{12}>0$.

Data Presentation, Analysis and Interpretation

Data Presentation

In this section, the secondary data used for this study are presented. The data were sourced mainly from Central Bank of Nigeria (CBN) Statistical Bulletin. These data are presented in table 4.1 below:

Table 4.1a: Quarterly data on Gross Domestic Product (GDP), Oil Refining Subsector GDP (OILRSG), Cement Subsector GDP (CETSG), Food, Beverage and Tobacco Subsector GDP (FBTSG), Textile, Apparel and Footwear Subsector GDP (TAFSG), Wood and Wood Products Subsector GDP (WWPSG)

YEAR	GDP (N' Billion)	OILRSG (N' Billion)	CETSG (N' Billion)	FBTSG (N' Billion)	TAFSG (N' Billion)	WWPSG (N' Billion)
2010						

Q1	12,583.5	1,937.6	54.5	565.2	80.3	30.8
Q2	12,934.5	1,983.9	54.9	568.1	81.4	31.0
Q3	14,304.4	2,092.0	55.6	574.1	87.4	29.9
Q4	14,789.8	2,389.1	56.1	591.1	103.5	31.7
2011						
Q1	20,169.78	2,882.73	55.26	627.03	106.77	32.38
Q2	21,734.83	2,830.85	60.64	655.79	145.29	33.88
Q3	22,933.14	2,667.52	66.31	677.73	172.25	36.60
Q4	24,205.86	2,658.31	68.87	706.99	185.36	36.55
2012						
Q1	21,041.70	3,018.57	72.20	754.15	236.14	45.01
Q2	22,859.15	2,717.01	74.99	765.61	227.45	43.88
Q3	24,313.64	3,083.26	76.49	858.07	229.81	45.33
Q4	25,930.47	2,496.20	77.00	781.15	235.04	44.30
2013						
Q1	22,235.32	2,756.31	106.17	915.07	331.57	49.91
Q2	23,547.47	2,327.59	111.07	935.00	319.38	50.32
Q3	26,537.65	2,736.08	115.67	986.02	322.69	51.63
Q4	29,169.06	2,476.34	117.85	978.41	330.04	52.22
2014						
Q1	20,169.78	2,612.07	144.28	1,010.56	465.96	57.52
Q2	21,734.83	2,633.33	147.12	1,037.03	439.30	59.10
Q3	22,933.14	2,328.26	153.47	1,107.51	448.49	60.37
Q4	24,205.86	2,042.84	159.74	1,086.68	461.98	61.56
2015						
Q1	21,041.70	1,391.09	180.79	1,010.46	457.22	63.47
Q2	22,859.15	1,746.40	184.27	1,010.66	456.77	64.30
Q3	24,313.64	1,539.68	189.06	1,129.38	466.75	65.26
Q4	25,930.47	1,313.24	195.80	1,141.03	490.84	66.23
2016						
Q1	22,235.32	887.49	150.19	963.39	467.48	66.38
Q2	23,547.47	959.56	154.00	989.80	465.10	66.66
Q3	26,537.65	1,602.72	161.66	1,028.34	519.54	67.65
Q4	29,169.06	1,917.55	183.75	1,120.14	574.89	74.41

Source: Central Bank of Nigeria Statistical Bulletin (2017)

Table 4.1b: Table 4.1b: Quarterly data on Gross Domestic Product (GDP), Pulp, Paper and Paper Products Subsector GDP (PPPSG), Chemical and Pharmaceutical Products Subsector GDP (CPPSG), Non-Metallic Products Subsector GDP (NMPSG), Plastic and Rubber Products Subsector GDP (PRPSG), Electrical and Electronics Subsector GDP (EETSG), Basic metal, Iron and Steel Subsector GDP (BMISSG), Motor Vehicles & Assembly Subsector GDP (MVASG) (Continued)

YEAR	PPPSG (N' Billion)	CPPSG (N')	NMPSG (N')	PRPSG (N')	EETSG (N' Billion)	BMISSG (N' Billion)	MVASG (N' Billion)
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		Billion)	Billion)	Billion)			
2010							
Q1	6.0	6.2	14.9	8.4	0.6	11.0	5.3
Q2	6.0	6.3	15.1	8.4	0.6	11.0	5.4
Q3	6.2	6.3	14.0	8.5	0.6	11.1	5.8
Q4	6.1	6.3	15.6	8.6	0.6	11.4	5.4
2011							
Q1	6.90	5.20	23.71	19.25	1.03	23.87	6.59
Q2	7.32	11.82	24.83	20.12	1.12	25.15	6.98
Q3	8.01	12.19	27.69	21.05	1.27	26.89	7.15
Q4	8.22	12.24	26.97	21.57	1.36	30.14	7.17
2012							
Q1	8.83	11.38	33.06	29.30	1.17	33.58	10.52
Q2	8.21	17.40	30.63	30.09	1.22	34.03	9.81
Q3	8.19	17.07	32.48	30.29	1.23	34.23	9.58
Q4	8.31	23.84	30.71	30.59	1.23	34.53	9.36
2013							
Q1	12.41	22.65	45.08	39.21	1.22	38.83	12.68
Q2	12.38	28.49	44.70	40.18	1.28	39.72	12.74
Q3	12.84	28.87	46.15	40.98	1.34	40.77	13.03
Q4	13.00	29.02	46.48	41.62	1.38	42.84	12.66
2014							
Q1	14.06	32.46	63.66	53.15	1.35	45.91	17.20
Q2	14.57	40.31	63.13	54.86	1.39	47.36	16.34
Q3	15.44	41.63	66.66	56.81	1.50	49.42	16.90
Q4	15.87	40.21	65.84	57.13	1.52	53.08	16.69
2015				67.13			
Q1	15.48	42.41	80.48		1.43	49.49	18.31
Q2	16.17	48.42	76.23	65.41	1.43	50.04	17.10
Q3	17.14	49.76	81.07	67.66	1.56	52.45	17.81
Q4	17.30	49.55	77.82	66.96	1.60	55.33	16.85
2016							
Q1	16.11	46.28	88.69	73.24	1.47	51.09	15.11
Q2	16.50	50.38	80.88	69.02	1.45	52.10	12.86
Q3	18.35	49.43	87.44	72.76	1.58	54.90	12.68
Q4	19.76	51.63	87.08	76.43	1.70	61.48	12.14

Source: Central Bank of Nigeria Statistical Bulletin (2017)

Data Analysis

The method of data analysis used in this study is Ordinary Least Square (OLS) method. The OLS approach, which is quantitative technique, was used in estimating the multiple regression model specified. Analyses of data were carried out through the use of econometric views (Eviews). This section therefore presents the empirical results obtained as follows:

Table 4.2: Results of Multiple Regression Analysis

Dependent Variable: GDP

Method: Least Squares

Date: 18/11/17 Time: 06:28

Sample: 1 28

Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2163.959	8925.067	0.242459	0.8119
OILRSG	0.186728	1.250528	6.149320	0.0000
CETSG	10.28127	42.88613	2.339734	0.0340
FBTSG	12.95396	11.24652	4.151819	0.0007
TAFSG	10.07470	22.21570	3.453495	0.0071
WWPSG	116.5541	306.2895	0.380536	0.7093
PPPSG	998.0191	653.0551	1.528231	0.1487
CPPSG	114.6005	165.2525	2.156653	0.0489
NMPSG	807.0861	374.2308	0.693487	0.4993
PRPSG	1024.993	567.9546	2.804710	0.0117
EETSG	20971.92	8229.480	1.073840	0.3011
BMISSG	557.4530	519.1210	2.548390	0.0232
MVASG	673.3606	368.8634	1.825502	0.0893
R-squared	0.947068	Mean dependent var	22029.60	
Adjusted R-squared	0.901698	S.D. dependent var	4126.577	
F-statistic	20.87420	Durbin-Watson stat	1.898267	
Prob(F-statistic)	0.000001			

Source: Eviews 8.0 Regression Result

Interpretation of Results

Relationship that Exists in the Model:

GDP=2163.959+0.186728OILRSG+10.28127CETSG+12.95396FBTSG+10.07470TAFSG+116.5541WWPSG+998.0191PPPSG+114.6005CPPSG+807.0861NMPSG+1024.993PRPSG+20971.92EETSG+557.4530BMISSG + 673.3606MVASG.

Oil Refining Subsector GDP (OILRSG) and Gross Domestic Product (GDP)

There is a positive relationship between Oil Refining subsector GDP and Gross Domestic Product. This is because the coefficient of Oil Refining subsector GDP is positive with 0.186728. This means that a unit increase in Oil Refining subsector GDP will lead to 0.186728 increase in Gross Domestic Product while a unit decrease in Oil Refining subsector GDP will lead to 0.186728 decrease in Gross Domestic Product.

Cement Subsector GDP(CETSG) and Gross Domestic Product (GDP)

There is a positive relationship between Cement subsector GDP and Gross Domestic Product. This is because the coefficient of Cement subsector GDP is positive with 10.28127. This means that a unit increase in Cement subsector GDP will lead to 10.28127 increase in Gross Domestic Product while a unit decrease in Cement subsector GDP will lead to 10.28127 decrease in Gross Domestic Product.

Food, Beverage and Tobacco Subsector GDP (FBTSG) and Gross Domestic Product (GDP)

There is a positive relationship between Food, Beverage and Tobacco subsector GDP and Gross Domestic Product. This is because the coefficient of Food, Beverage and Tobacco subsector GDP is positive with 12.95396. This means that a unit increase in Food, Beverage and Tobacco subsector GDP will lead to 12.95396 increase in Gross Domestic Product while a unit decrease in Food, Beverage and Tobacco subsector GDP will lead to 12.95396 decrease in Gross Domestic Product.

Textile, Apparel and Footwear Subsector GDP (TAFSG) and Gross Domestic Product (GDP)

There is a positive relationship between Textile, Apparel and Footwear subsector GDP and Gross Domestic Product. This is because the coefficient of Textile, Apparel and Footwear subsector GDP is positive with 10.07470. This means that a unit increase in Textile, Apparel and Footwear subsector (GDP) will lead to 10.07470 increase in Gross Domestic Product while a unit decrease in Textile, Apparel and Footwear subsector GDP will lead to 10.07470 decrease in Gross Domestic Product.

Wood and Wood Products Subsector GDP (WWPSG) and Gross Domestic Product (GDP)

There is a positive relationship between Wood and Wood Products subsector GDP and Gross Domestic Product. This is because the coefficient of Wood and Wood Products subsector GDP is positive with 116.5541. This means that a unit increase in Wood and Wood Products subsector GDP will lead to 116.5541 increase in Gross Domestic Product while a unit decrease in Wood and Wood Products subsector GDP will lead to 116.5541 decrease in Gross Domestic Product.

Pulp, Paper and Paper Products Subsector GDP (PPPSG) and Gross Domestic Product (GDP)

There is a positive relationship between Pulp, Paper and Paper Products subsector GDP and Gross Domestic Product. This is because the coefficient of Pulp, Paper and Paper Products subsector GDP is positive with 998.0191. This means that a unit increase in Pulp, Paper and Paper Products subsector GDP will lead to 998.0191 increase in Gross Domestic Product while a unit decrease in Pulp, Paper and Paper Products subsector GDP will lead to 998.0191 decrease in Gross Domestic Product.

Chemical and Pharmaceutical Products subsector GDP (CPPSG) and Gross Domestic Product (GDP)

There is a positive relationship between Chemical and Pharmaceutical Products subsector GDP and Gross Domestic Product. This is because the coefficient of Chemical and Pharmaceutical Products subsector GDP is positive with 114.6005. This means that a unit increase in Chemical and Pharmaceutical Products subsector GDP will lead to 114.6005 increase in Gross Domestic Product while a unit decrease in Chemical and Pharmaceutical Products subsector GDP will lead to 114.6005 decrease in Gross Domestic Product.

Non-Metallic Products Subsector GDP (NMPSG) and Gross Domestic Product (GDP)

There is a positive relationship between Non-Metallic Products subsector GDP and Gross Domestic Product. This is because the coefficient of Non-Metallic Products subsector GDP is positive with 807.0861. This means that a unit increase in Non-Metallic Products subsector GDP will lead to 807.0861 increase in Gross Domestic Product while a unit decrease in Non-Metallic Products subsector GDP will lead to 807.0861 decrease in Gross Domestic Product.

Plastic and Rubber Products Subsector GDP (PRPSG) and Gross Domestic Product (GDP)

There is a positive relationship between Plastic and Rubber Products subsector GDP and Gross Domestic Product. This is because the coefficient of Plastic and Rubber

Productssubsector GDP is positive with 1024.993. This means that a unit increase in Plastic and Rubber Productssubsector GDP will lead to 1024.993 increase in Gross Domestic Product while a unit decrease in Plastic and Rubber productssubsector GDP will lead to 1024.993 decrease in Gross Domestic Product.

Electrical and Electronics subsector GDP (EETSG)and Gross Domestic Product (GDP)

There is a positive relationship between Electrical and Electronics subsector GDP and Gross Domestic Product. This is because the coefficient of Electrical and Electronics subsector GDP is positive with 20971.92. This means that a unit increase in Electrical and Electronics subsector GDP will lead to 20971.92 increase in Gross Domestic Product while a unit decrease in Electrical and Electronics subsector GDP will lead to 20971.92 decrease in Gross Domestic Product.

Basic Metal, Iron and Steel Subsector GDP (BMISSG)and Gross Domestic Product (GDP)

There is a positive relationship between Basic metal, Iron and Steel subsector GDP and Gross Domestic Product. This is because the coefficient of Basic metal, Iron and Steel subsector GDP is positive with 557.4530. This means that a unit increase in Basic metal, Iron and Steel subsector GDP will lead to 557.4530 increase in Gross Domestic Product while a unit decrease in Basic metal, Iron and Steel subsector GDP will lead to 557.4530 decrease in Gross Domestic Product.

Motor Vehicles & Assemblysubsector GDP (MVASG)and Gross Domestic Product (GDP)

There is a positive relationship between Motor Vehicles &Assemblysubsector GDP and Gross Domestic Product. This is because the coefficient of Motor Vehicles &Assemblysubsector GDP is positive with 673.3606. This means that a unit increase in Motor Vehicles &Assemblysubsector GDP will lead to 673.3606 increase in Gross Domestic Product while a unit decrease in Motor Vehicles &Assemblysubsector GDP will lead to 673.3606 decrease in Gross Domestic Product.

Interpretation of R-Squared

The coefficient of multiple determinations (R-squared) was used to find out how well the sample regression line fits the data (goodness of fit). It also measures how the percentage of the total variations in the dependent variable that is explained by the independent or explanatory variable. The value of R-squared from the regression result in table 4.2 is 0.947068. The result of R-squared which is greater than 0.5(50%) and close to 1(100%) indicates that the regression line has good fit. This also implies that about 95 per cent of the changes in the independent variables explain the changes in the GDPwhile the remaining 5 per cent of the variation in Gross Domestic Product (GDP) is captured by the error term.

Analysis of t-test

The t-test was carried out to test the statistical significance of the each parameter in the estimated model. Statistically, the t-statistics of the variables under consideration are interpreted based on the following statement of hypotheses:

Null hypothesis (H₀): Each parameter in the estimated model is not statistical significant.

Alternative hypothesis (H₁): Each parameter in the estimated model is statistical significant.

TABLE 4.3: SUMMARY OF T-TEST

Variables	t-calculated Values	t- tabulate d Values	Prob. Values	Decision Rule	Conclusion
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Oil Refining subsector GDP	6.149320	2.131	0.0000	Reject H_0	Significant
Cement subsector GDP	2.339734	2.131	0.0340	Reject H_0	Significant
Food, Beverage and Tobacco subsector GDP	4.151819	2.131	0.0007	Reject H_0	Significant
Textile, Apparel and Footwear subsector GDP	3.453495	2.131	0.0071	Reject H_0	Significant
Wood and Wood Products subsector GDP	0.380536	2.131	0.7093	Accept H_0	Not Significant
Pulp, Paper and Paper Products subsector GDP	1.528231	2.131	0.1487	Accept H_0	Not Significant
Chemical and Pharmaceutical Products subsector GDP	2.156653	2.131	0.0489	Reject H_0	Significant
Non-Metallic Products subsector GDP	0.693487	2.131	0.4993	Accept H_0	Not Significant
Plastic and Rubber Products subsector GDP	2.804710	2.131	0.0117	Reject H_0	Significant
Electrical and Electronics subsector GDP	1.073840	2.131	0.3011	Accept H_0	Not Significant
Basic metal, Iron and Steel subsector GDP	2.548390	2.131	0.0232	Reject H_0	Significant
Motor Vehicles & Assembly subsector GDP	1.825502	2.131	0.0893	Accept H_0	Not Significant

Source: *Computation of the Researcher*

Table 4.3 above shows the summary of the t-test carried out. A careful observation of the table revealed that Oil Refining subsector GDP, Cement subsector GDP, Food, Beverage and Tobacco subsector GDP, Textile, Apparel and Footwear subsector GDP, Chemical and Pharmaceutical Products subsector GDP, Plastic and Rubber productssubsector GDP and Basic metal, Iron and Steel subsector GDP are statistically significant while Wood and Wood Products subsector GDP, Pulp, Paper and Paper Products subsector GDP, Non-Metallic Products subsector GDP, Electrical and Electronics subsector GDP and Motor Vehicles &assembly subsector GDP are not statistically significant.

Hypotheses Testing

The hypotheses formulated are tested in this section by t-test through the help of E-views statistical package, 8.0 versions. The decision rule for accepting or rejecting each hypothesis is stated below:

Decision Rule One: Reject the null hypothesis one (H_0) at 5% level of significance if the t-calculated value is greater than the t-tabulated value. On the other hand, accept the null hypothesis one (H_0) at 5% level of significance if t-calculated value is less than the t-tabulated value.

Restatement of Hypothesis One

H_{01} : There is no significant relationship between Oil Refining subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis One: The t-calculated value for Oil Refining subsector GDP from the regression result as shown in table 4.2 is 6.149320 while the t-tabulated value from the statistical table is 2.131. The H_{01} is rejected since the t-calculated value (6.149320) for Oil

Refining subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Oil Refining subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Two

H₀₂: There is no significant relationship between Cement subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Two: The t-calculated value for Cement subsector GDP from the regression result as shown in table 4.2 is 2.339734 while the t-tabulated value from the statistical table is 2.131. The H₀₂ is rejected since the t-calculated value (2.339734) for Cement subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Cement subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Three

H₀₃: There is no significant relationship between Food, Beverage and Tobacco subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Three: The t-calculated value for Food, Beverage and Tobacco subsector GDP from the regression result as shown in table 4.2 is 4.151819 while the t-tabulated value from the statistical table is 2.131. The H₀₃ is rejected since the t-calculated value (4.151819) for Beverage and Tobacco subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Food, Beverage and Tobacco subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Four

H₀₄: There is no significant relationship between Textile, Apparel and Footwear subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Four: The t-calculated value for Textile, Apparel and Footwear subsector GDP from the regression result as shown in table 4.2 is 3.453495 while the t-tabulated value from the statistical table is 2.131. The H₀₄ is rejected since the t-calculated value (3.453495) for Textile, Apparel and Footwear subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Textile, Apparel and Footwear subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Five

H₀₅: There is no significant relationship between Wood and Wood Products subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Five: The t-calculated value for Wood and Wood Products subsector GDP from the regression result as shown in table 4.2 is 0.380536 while the t-tabulated value from the statistical table is 2.131. The H₀₅ is accepted since the t-calculated value (0.380536) for Wood and Wood Products subsector GDP is less than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is no significant relationship between Wood and Wood Products subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Six

H₀₆: There is no significant relationship between Pulp, Paper and Paper Products subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Six: The t-calculated value for Pulp, Paper and Paper Products subsector GDP from the regression result as shown in table 4.2 is 1.528231 while the t-

tabulated value from the statistical table is 2.131. The H_{06} is accepted since the t-calculated value (1.528231) for Pulp, Paper and Paper Products subsector GDP is less than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is no significant relationship between Pulp, Paper and Paper Products subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Seven

H₀₇: There is no significant relationship between Chemical and Pharmaceutical Products subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Seven: The t-calculated value for Chemical and Pharmaceutical Products subsector GDP from the regression result as shown in table 4.2 is 2.156653 while the t-tabulated value from the statistical table is 2.131. The H_{07} is rejected since the t-calculated value (2.156653) for Chemical and Pharmaceutical Products subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Chemical and Pharmaceutical Products subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Eight

H₀₈: There is no significant relationship between Non-Metallic Products subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Eight: The t-calculated value for Non-Metallic Products subsector GDP from the regression result as shown in table 4.2 is 0.693487 while the t-tabulated value from the statistical table is 2.131. The H_{08} is accepted since the t-calculated value (0.693487) for Non-Metallic Products subsector GDP is less than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is no significant relationship between Non-Metallic Products subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Nine

H₀₉: There is no significant relationship between Plastic and Rubber products subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Nine: The t-calculated value for Oil Refining subsector GDP from the regression result as shown in table 4.2 is 2.804710 while the t-tabulated value from the statistical table is 2.131. The H_{09} is rejected since the t-calculated value (2.804710) for Plastic and Rubber products subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Plastic and Rubber Products subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Ten

H₀₁₀: There is no significant relationship between Electrical and Electronics subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Ten: The t-calculated value for Electrical and Electronics subsector GDP from the regression result as shown in table 4.2 is 1.073840 while the t-tabulated value from the statistical table is 2.131. The H_{010} is accepted since the t-calculated value (1.073840) for Electrical and Electronics subsector GDP is less than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is no significant relationship between Electrical and Electronics subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Eleven

H₀₁₁: There is no significant relationship between Basic metal, Iron and Steel subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Eleven: The t-calculated value for Basic metal, Iron and Steel subsector GDP from the regression result as shown in table 4.2 is 2.548390 while the t-tabulated value from the statistical table is 2.131. The H_{011} is rejected since the t-calculated value (2.548390) for Basic metal, Iron and Steel subsector GDP is greater than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is a significant relationship between Basic metal, Iron and Steel subsector GDP and Gross Domestic Product in Nigeria.

Restatement of Hypothesis Twelve

H_{012} : There is no significant relationship between Motor Vehicles & Assembly subsector GDP and Gross Domestic Product in Nigeria.

Decision on Hypothesis Twelve: The t-calculated value for Motor Vehicles & Assembly subsector GDP from the regression result as shown in table 4.2 is 1.825502 while the t-tabulated value from the statistical table is 2.131. The H_{012} is accepted since the t-calculated value (1.825502) for Motor Vehicles & Assembly subsector GDP is less than the t-tabulated value (2.131) at 5% level of significance. The conclusion is that there is no significant relationship between Motor Vehicles & Assembly subsector GDP and Gross Domestic Product in Nigeria.

CONCLUSION

The study examined the impact of manufacturing sector on the Nigerian economy. The study found that manufacturing sector is a significant determinant of economic growth in Nigeria. The study therefore concludes that the contribution of manufacturing sector to the Nigerian economy is significant as all the GDP of all sectors under manufacturing sector exerts joint significant impact on the Nigerian economy. As a result, government should work towards improving the manufacturing sector so as to improve the performance on the Nigerian economy.

RECOMMENDATIONS

Based on the theoretical and empirical findings of this study, the following are recommended:

1. That manufacturing sector should be encouraged by the government through policy packages such as tax holiday and other helpful concessions in order to enhance manufacturing output in the country.
2. More emphasis should be placed on technical education in Nigeria so as to strengthen the country's industrial base thereby enhancing manufacturing output.
3. Manufacturing enterprises in Nigeria should constantly update their plants through the injection fresh capital, as this will enable them to boost productivity and produce high quality goods of international standard.
4. The exploitation of minerals requires large capital outlay; therefore, the government, especially at the state level, should give financial support to local enterprises engaged in mining activities.

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